

University News

MONDAY, NOVEMBER 16, 1987

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Prof. Moonis Raza, Vice-Chancellor, University of Delhi, who delivered the convocation address at the sixth annual convocation of the School of Planning and Architecture, awarding the degree to one of the students.

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UNIVERSITY NEWS

VOL. XXV **NOVEMBER 16**
No. 46 **1987**
Price **Rs. 1.50**

A Weekly Chronicle of Higher Education published by the Association of Indian Universities

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What are the Differences ?

J. N. Kapur*

I have been a visiting professor at two USA, three Canadian and two Australian Universities for a total period of about five years. I have also taught in two Indian Universities and have been a Vice-Chancellor of a third Indian University for a total period of about forty years. I have been asked about the differences I have noticed in Indian and Western systems of Education. About fourteen years ago, I expressed my views in two books—Current Issues in Higher Education in India; and Current Issues in Higher Education in various countries of the World—both published by S. Chand and Co, Delhi. In the present article I am updating my impressions about the Western Education System.

Higher Education is not a Birthright

The admissions to Universities are highly restricted. Only those who have proven aptitude for higher education can get admission. The seats in every course are regulated by the facilities available. Admissions to universities are made strictly on merit. There is enough counselling at schools and students who do not have enough aptitude for higher education are advised accordingly and the advice is gracefully accepted by the students and their parents. Students are willing to opt for other vocational courses. In any case, higher education is not regarded as a birth-right. Usually students getting below sixty per cent marks have no opportunities of getting admissions to universities.

Higher Education is Relatively Costly

The cost per student is much higher both for the student and the State. Students usually pay for their higher education either through bank loans or through part-time work. There are some students who are supported, by their parents, but even when parents are able and willing to support, many students consider it more honourable to support themselves through bank loans and part-time work.

In some universities, there is a 'cooperative' system i.e. local industries and universities cooperate. Students study and work in alternative trimesters and the universities arrange their work in those industries which are relevant to their studies.

Students are Highly Motivated

The reasons are :

- (i) Students have worked hard on their studies to get admissions to universities;
- (ii) Students at universities very often pay for their own education;
- (iii) They are almost sure of getting better jobs than they would

have got without university education;

(iv) There is complete fairness in the job market and student knows that the job he gets will depend on his intrinsic competence and not just on the examination results—it will certainly not depend on his connections; and

(v) There is continuous internal evaluation in which every student has faith and the student has to do continuous hard work to get reasonably satisfactory grades.

Selection of Teachers are Fair

In every appointment in a college or a university, there is a selection committee consisting of some members of the department and some members from outside the department. There are no outside experts. However there are well-defined procedures and norms for these selection committees—sometimes given in handbooks of 80-100 pages. Applications are invited. On each short-listed candidate, expert opinions of 4-6 referees are obtained. The candidate is invited to give an open seminar in which apart from members of the selection committee, students and teachers can ask him questions and form their opinion of his knowledge and teaching capacity. He also meets members of the faculty individually. At the end of his visit, opinions of students and teachers are pooled together by the selection committee. This process will go on for all short-listed candidates. The process may take 3-6 months. At the end, the selection committee will consider all the inputs and give its recommendation to the university authorities with the reasons in writing in detail. The system is so open that no unfair recommendations can work.

In our system, which is highly secretive and closed, recommendations can and do work. Even when the selection is fair, there is no confidence in it, because of its lack of openness. The "outside experts" interview candidates for ten or fifteen minutes and take decisions. In spite of all secrecy, some experts are approached and pressurised and they are willing to be 'influenced' because they are not accountable for their actions and they have not to give any reasons for their actions except to a small group in a closed room.

A Teacher's Probation Period is Long

It is usual for a teacher to take five to six years

to get a tenure i.e. to get confirmed. He is being constantly judged, not just by his head of department, but also by his peers and students. He is judged through opinions of his students, as demonstrated through student reaction surveys, through the opinions of senior faculty members and through his research publications. He of course knows, through a written document, as to what is expected of him. Thus he is expected to keep an above-average teaching record, he is expected to do good work on the committees on which he is expected to work, he is expected to produce a number of good papers in referred journals and he is expected to participate in national conferences. At any time, if his record is unsatisfactory, his contract can be terminated but well-documented reasons will be given to him. At the time of confirmation, again a committee considers all documents concerning his teaching, research, committee work, etc. and will give reasons why he should or should not be confirmed. His confirmation will not depend just on a good report by his head of department.

Even when a teacher is confirmed, he has to continue to work hard for his promotion which will again be given by objective consideration of his merits and he knows in advance what he has to do to earn his promotion.

Motivation for Sustained Good Work by Teachers

It may take 15-20 years for a university teacher to become a professor and there is sufficient motivation for him to do good work in this period, specially since he knows that his promotion will depend on the work he does and not just on the good relations with the authorities. Good relations are desirable but are far from sufficient for securing promotions.

After a teacher becomes a professor, he cannot relax and say "Why should I work since I have no more promotion to seek?" There are two components in the system which can still make him put in hard work: (1) Student reaction surveys do not make a distinction between an assistant professor and a professor. In many universities, teachers are arranged according to these surveys and those who fall below the median have a sense of humiliation. Even senior professor cannot afford to be lax in his teaching; he is constantly being examined by his students and (2) National research funding agencies give grants based on his work. If a professor does no research or does trivial research, he does not get

national grant and this is sufficient to bring him down in the opinion of his peers. Even a reduction in grant is regarded as a calamity to be avoided. Some departments do not give funds to their teachers for travel or even for photocopying. They are expected to get these from their grants. Continuing research becomes essential to keep their prestige in the academic profession. In the USA, salaries are paid only for nine months in a year, but a professor can take three months salary out of his research grants. No research therefore means no pay for three months and this is a high incentive for staying active in research. Of course there is a faith in the fairness of the research grant system.

Motivation for Educational Administration

Students care for good teaching and will go to only those institutions where teaching is good. Students' fees form a significant part of the budget of a university. Educational administrators will like to attract good students to their universities and will like to generate a high demand for seats in their universities. As such they are interested in good teaching and would like to get rid of indifferent teachers at the earliest opportunity.

Research grants to faculty members very often make a significant part of university funds. As such, university administrators like to appoint teachers who can get grants or who have a potential of getting grants.

No college or university president can afford to yield to pressures either in admissions or appointments. Every one of them is, in general, achievement-conscious.

There are also independent accreditation agencies which can derecognise degrees given by some college or university departments. This also acts as a sufficient deterrent against lowering standards.

Interest of Politicians

There is no political interference in day-to-day running of schools, colleges and universities. Schools all over the country have almost uniform facilities and more or less similar standards. Education is also free at pre-university level. Teachers have to satisfy parents and the principal and cannot survive through political patronage.

All politicians are educated and consider education as a means of human resources development, not only in words, but in true spirit. They do realise that in the modern world of high competition and high technology, high-quality education is essential for the survival of a nation. They are constantly emphasising excellence in education and are prepared to provide necessary funds for assuring the excellence. This is in contrast to the situation in our country, where many politicians regard colleges and universities as instruments of political advancement or as places where they can do favours to their friends.

The Examination System

In most cases the teacher is himself the examiner, but the system is quite open. The answer books of all the students are available for inspection and every student can discuss the marks given to him by his teacher. In fact a great deal of learning takes place in this discussion. Every teacher has an office and has to have regular office hours when he is available to the students.

Text-Books and Libraries

Every student buys all the text-books prescribed. He considers it a worthwhile expenditure, even if he has to take a loan for it. In internal examination system, teachers insist on the students reading the textbooks themselves and easier portions are not covered in the class. This system has two indirect benefits. The publishers do a thriving business and high quality books are produced. Also libraries are fully utilised. Teachers receive a large number of complimentary copies and can build up good personal libraries. The libraries are fully computerised. There is an excellent system of inter-library loan service, of great benefit to research workers.

Teachers, Professional Organisations

These are strong, but in addition to bargaining for salaries, they also insist on high standards of performance by their members. They lay down codes of conduct for their members. They enter into contracts with the universities, on behalf of the teachers, which lay down both the rights and duties of teachers in detail. These organisations have a high stake in the excellence of the educational system.

□

DELHI COLLEGE

THE HARBINGER OF RENAISSANCE

Masroor Hashmi*

Just outside the old rampart of Shahjahanabad, opposite Ajmeri Gate, is the **madrassah** of Ghaziuddin which now houses Zakir Husain College and Anglo Arabic Senior Secondary School. Ghaziuddin Khan Feroz Jung II who got this **madrassah** constructed was the son of Nizamul Mulk Asif Jah, the founder nawab of Hyderabad Deccan, and was the grandson of his namesake who was a moghul governor. It is the moghul governor who lies buried in the redstone tomb near the mosque built of the same material. A **madrassah** and a mosque near the tomb of a king or a nobleman was a common sight during medieval period. Because such a complex could ensure recitation of holy Quran near the tomb of the departed soul.

The **madrassah** of Ghaziuddin started functioning in 1772, probably with the same course of studies that was prevalent those days. The course then included Persian, Arabic, mathematics, logic etc., beside subjects of religious nature. But all this is mere conjecture in the absence of authentic proof in this regard.

It was in this **madrassah** complex that the Delhi College first started in 1825 on the recommendation of the General Committee for Public Instruction, and a sum of rupees five hundred per month was granted for the college by the government. This grant was made from rupees one lakh allocated by the British Parliament for the revival and improvement of vernacular literature and the introduction and promotion of knowledge and sciences among the people living in the British territories.

The purpose of starting this college was not merely to produce a class of Indians who could help the East India Company in the smooth functioning of civil and judicial administration, which seems to have been the main purpose for establishing the Fort William College at Calcutta. Delhi College was established to revive the arts and sciences of the East and to impart the Western learning through local languages.

Consequently, there were two departments in the college—the Oriental and the English. In the Oriental department knowledge of Arabic, Persian and Sanskrit was imparted, and in the English department sciences

of modern Europe beside English and Indian languages were taught. English department had started functioning in 1828, three years after the establishment of the college. The two departments influenced each other with regard to syllabi, method of teaching etc.

The European principals of the college, who had not only no prejudice against oriental learning but were themselves scholars of oriental studies, played an important part in bringing oriental and western learning closer each other. Their most valuable contribution was encouragement of translations of fine and useful works of western knowledge into Indian languages especially Urdu. A list of 128 such works is given by Dr. Abdul Haq in his book on Delhi College. The translations were normally done by the teachers and bright students of the college. However, persons other than those directly connected with the college, were also commissioned to compile or translate books.

The college produced quite a number of scholars, some of whom have left permanent imprints in their area of specialization. One of them was Prof. Ramchander. He was a teacher par excellence and had produced several useful books on mathematics. Dr. Nazir Ahmed and Mohammad Husain Azad were great prose writers whose style of writing has always been a source of inspiration for prose writers. Munshi Zakauddin, whose biography has been written by C. F. Andrews, was a prolific writer whose versatility found expression in the fields of history, geography, public morals, mathematics and physics. If one goes through the long list of scholars produced by the Delhi College and their achievements, one feels no hesitation to believe the words of C. F. Andrews that Delhi College had started a renaissance which was cut short by the revolt of 1857.

It was, perhaps, the influence of this renaissance which prompted poet Ghalib to advise Sir Saiyyed Ahmad Khan to learn sciences of the west instead of wasting time on writing *Athar-us-Sanadid*, a book on historical monuments. Incidentally, Ghalib was offered a teaching job in the Delhi College. He declined it because the Principal did not turn up at the college gate to receive him personally.

The revolt of 1857 was a calamity of unusual proportions for the college, which had now shifted to

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ashmere Gate in the building which was then known as the library of Dara Shikoh, and is now a part of Delhi College of Engineering.

Dr. Abdul Haq has given a lucid description of what happened to the college during the horrible days of 1857. He writes thus :

On the morning of 11th May some people came running to the college and entered the classes. They were extremely disturbed at what they had seen in the streets. They asked their sons and wards to at once collect their books and come home with them. Principal Taylor was getting confused at the sudden eruption of violence when a messenger from the commandant of the Magazine delivered a letter to him.

The commandant had written that the soldiers were up in arms against the British, and had advised him to at once reach the Magazine where a small garrison was stationed to protect the explosives. Principal Taylor, Headmaster Roberts and two teachers Stuart and Stiener reached the Magazine building, a part of which can still be seen opposite the General Post Office at Kashmere Gate. When the noise of running steps and shouting came nearer the gate of the Magazine was closed.

Soon the Magazine was besieged by the soldiers who put ladders and scaled the walls of the building. Finding themselves outmanoeuvred by Indian soldiers, the British troops inside the Magazine ignited the explosives. The sound of the violent explosion could be heard in the remotest corner of the city and beyond it. With the explosion died the British soldiers inside and Indians outside the Magazine, and so also Roberts and Stuart. But Taylor and Stiener survived it and ran out of a gap caused by the explosion. Taylor reached back the college compound, and took refuge in the house of his old cook.

The cook took him to Mohammad Baqer, the father of Mohammad Husain Azad and a personal friend of Taylor. Mohammad Baqer kept him in the cellar of his *Imambarhah*. When people got the news of Mohammad Baqer hiding Englishmen in his house, they threatened him with dire consequences. So, he dressed Taylor in an Indian attire and asked him to go to a safer place. But the unfortunate Principal had hardly reached Khirki Bairam Khan when a mob killed him. Later on, when the English control on the city was restored, Mohammad Baqer was executed for the murder of Taylor, and his son Mohammad Husain Azad fled away to Iran to save himself from British vendetta. He returned after amnesty was granted to him.

Of all the Europeans who had taken refuge in the Magazine, Stiener was, perhaps, the lone survivor. The European students and the two daughters of

Roberts were also killed. The library of the college was completely destroyed. All the English books were torn into pieces, and the Persian, Arabic, Sanskrit books were carried away to be either thrown away or sold on a cheap price. The anger was too great to spare even English books.

The college was destroyed in 1857 and so also the academic policy that governed it during pre-revolt days. In 1864 when the college emerged again Urdu gave place to English, and oriental studies were pushed far behind. It was Delhi College in name only; its true spirit had gone. In 1877 the college was closed by order of the government without assigning any reason. Its staff was transferred to Lahore College which was tantamount to the transfer of the college itself.

But the *madrasah* Ghaziuddin was so close to the populated city of Shahjahanabad and its building so ideally suited to be a place of learning that it could not remain idle for long. A school was started in the building five years after the closure of the college. The school took forty years to become a graduate college and another twenty years to become a postgraduate college. This time it was named Anglo Arabic College and not Delhi College. The new name, however, was reminiscent of the old Delhi College which had an anglo-oriental character. The college, it seems, had once again completed its life cycle.

The partition of India which brought in its train all that is worst in human nature affected the city of Delhi more than any other Indian city. The college once again suffered with its parent city. It was closed again with almost no hope of revival. But it did revive after the conditions became normal. In 1948 the Ministry of Education of Independent India formed an executive committee with chairman Dr. Zakir Husain for reviving the college. He put in all his efforts to revive the college and succeeded in doing so.

It was on his insistence that the college was named Delhi College and not Anglo Arabic College as before. But he little knew then that after his death it would be rechristened as Dr. Zakir Husain College. Perhaps, he would have not allowed this change of name. In 1974 when this change of name took place a trust was established and another executive committee was formed to run the college.

Now the financial position of the college is quite sound. Its student population is increasing every year. In all probability the days of trials and tribulations are over, and the story of Delhi College has come to a happy end. But a more befitting end of the story would be the establishment of a 'Delhi College Museum' near *madrasah* Ghaziuddin where the college started its life in 1825. This would be possible after the Dr. Zakir Husain College is shifted to its new building. □

POPULATION EDUCATION

A Conceptual Framework

A.K. Ghosh*

The very term 'population explosion' conjures up visions of swarms of people like teeming ants covering every square inch of land and perhaps ocean. If a person in 1900 could have foreseen the present metropolitan complexes with their density, geographic scope, traffic snarls and pollution, the picture would have been described as an intolerable one which called for immediate, imaginative, courageous and radical preventive measures. The most knowledgeable predictions for the next 30 to 50 years are little more than intensifications of our present status. Overcoming poverty and its consequences calls upon society to make the extra investment that will compensate for the long years of lag and to telescope that compensation into as short a period of time as possible. The incredible explosion of population is menaced by an avalanche of numbers that obscure and even threaten to destroy our identities, absorb our energies and pose social and economic problems dwarfing those faced by all earlier generations of mankind. And according to one belief, "The population problem in the 21st century will bring about the annihilation of personal freedom and severely circumscribe man's movements."

It took over a million years from Man's beginning on this earth upto 1800 for the world population to reach the first billion. The second billion was added in 120 years (1800-1920). The third billion was reached in 1960. It was five billion in 1987 and is expected to be about seven billion in 2000. This rate of increase is abnormal indeed and affects not only food supplies, as indicated by Malthus, but impinges heavily on various sectors of human life viz food, education, health, housing, environment, employment, as also other natural resources.

In the world today, India ranks second in population numbers and seventh in land area. That is, our country has to support about 15 per cent of the world's population on 2.4 per cent of the world's total land. And this population lives on less than 2 per cent of the world's income. Though India is only about two-fifths the size of the United States of America, she shelters more than two and a half times the population of the United States.

The role that education plays in the progress of individual and society and the impact it has on demographic behaviour, all countries are urged to further develop their formal and informal educational programmes; efforts should be made to eradicate illiteracy, promote education among the youth and end discrimination against women. Efforts have to be made on several fronts, both on short and long time basis, to bring down the rate of growth of population. Following prominent aspects may be mentioned in this behalf :

1. Adequate provision of family planning services with all their infrastructure .
2. Education of all ethnic and economic groups, about the effects of larger families :
3. Extension of motivational programmes and population education among the school-going children, as also adults and out-of-school youths : and
4. Economic and social policies directed towards population planning.

Educational institutions in all countries should be urged and encouraged to expand their curricula to include a study of population dynamics and policies, including where appropriate family life, responsible parenthood and the relation of population dynamics to socio-economic development. Governments are urged to co-operate in developing a world-wide system of international, regional and national institutions to meet the need for trained manpower. Assistance to the less developed countries should include, as appropriate, the improvement of educational infrastructure such as library facilities and computer services.

The phenomenon of population explosion has a variety of implications for the quality of life in the family, in the nation and in the world. The overall goal of a society directly confronted with the problem of population is to adopt ways and means of controlling unprecedented population growth to ensure a satisfactory standard of living for its people. These measures are necessary for personal and family welfare on the one hand and the welfare of the community on the other.

The following major instructional objectives are listed for imparting population education at the secon-

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dary stage. These specific objectives derived from the overall objectives of the existing society and school education are in terms of pupil growth in intellectual, affective and cognitive areas:

1. To acquire knowledge of essential terms and concepts related to population study, such as birth rate, death rate, migration, growth rate, life expectancy, population density etc.
2. To develop understanding about the dynamic character of population.
3. To acquire insightful awareness about present population trends, unprecedented rate of population growth and estimated further projections of population growth for different countries.
4. To develop a deep realisation of the implications of population trends, in a country in relation to health, food, transport, housing, pollution, education, employment, per capita income, natural resources and such other factors.
5. To develop insight into the relationship between implications of population growth and the quality of life in the family and the nation.
6. To develop skills in collecting and classifying population information, drawing maps and charts, exhibiting population material and undertaking similar curricular and co-curricular activities.
7. To develop interest in literature, current statistics and problems pertaining to population growth and its implications for various aspects of life.
8. To create understanding of the role of scientific and technological advancement in increasing human competence for planning and controlling population.
9. To develop an ability to arrive at sound decisions regarding population equilibrium by balancing population growth and resources.

The concept of population education has no doubt been thrown up in the education world quite recently. It is an educational responsibility to contemplate the economic, social and political issues. The programmes have, thus to be highlighted to meet its various social and economic objectives. Population education will

generate necessary awareness amongst learners and prepare them for adopting a small family norm in their own lives for the benefit of the community and the country.

Curriculum

Population education being of recent origin has emerged as a new curriculum area at the school stage as a result of socio-economic needs. The curriculum content is to be drawn from disciplines like economics, geography and demography. Depending on the nature



UNIVERSITY NEWS

A Weekly Chronicle of Higher Education

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of the content, this curriculum area can be integrated with relevant subjects like social studies, geography, civics and economics, general science and biology. Some elements of population education can also be integrated with languages, mathematics, physiology, hygiene and other subjects. Thus the nature of population education is multi-disciplinary and its curriculum can be woven into a variety of subjects. While developing curriculum two other important factors are also to be kept in view. First, this is a subject through which not only some knowledge is to be imparted but also new attitudes and values are to be inculcated, and second, curriculum prescribed for the secondary schools being already crowded, a new curriculum should take minimum possible time for the classroom instructions. Thus the development of a new curriculum design is called for, where an introductory study should be provided through systematic classroom instruction sometime in the beginning of the secondary stage in a few periods. This may be normally done as part of social studies or any of the social sciences, for their study should be continued through the entire span of the secondary stage by means of a variety of curriculum activities for reinforcement of ideas and attitudes regarding population planning and its implications for the individual and the society. At the university stage, no curriculum may be prescribed but population education in its various facets should be imparted through a scheme properly drawn out extension lectures.

Course Materials : Written Visual

The need for supplementing or modifying the present curriculum to include population education in its various dimensions has already been indicated. Till the textbooks are modified and revised, suitable materials in the form of handbooks may be developed for the use of school teachers, who would use them in their day-to-day teaching. Teaching needs to be reinforced by the display of visual materials, which have to be developed. The use of bulletin boards, paper flash cards and such other materials is essential.

In every school a separate bulletin board for population study should be installed. Exhibitions and film shows should be arranged both in the classrooms and outside. It should be noted that these aids are particularly suited for co-curricular activities in the field of population education.

Research

Population education being a new area of education,

calls for research not only in respect of curriculum but also in its teaching methodology. Departments of Education in Universities should have a research unit devoted to population education.

Evaluation

Evaluation of this new project should be made periodically to ascertain how far it has produced the desired impact. It is necessary to promote an inbuilt evaluation programme. To monitor the progress of the course of studies, the students may be given tests and called for interview from time to time.

Teacher Training

It is very important that teachers' training is oriented to take up this additional responsibility. Teacher training institutions should take special, appropriate and effective steps for this purpose.


Adult Education Programmes

Population education should, specially in developing countries, form an integral part of Adult Education Programme. It is now conceded that literacy programme should be used to impart instruction and disseminate information in various departmental activities, like agriculture, to become functional. It is also important that awareness of population problems and the methods to limit families with family planning measures are made an essential component of the Adult Education Programme. Population education should form a necessary part of the motivation campaign for the family planning programme too.

Non-Formal Education

Educational activities are now being developed through non-formal education. It is high time that population education is also included in this programme.

Role of Voluntary Agencies

It may be emphasised that population education is not only the responsibility of government agencies, but voluntary and non-government agencies have an important role in this behalf. In developing countries where the people are illiterate, more effective programmes can be carried out in this sphere through voluntary organisations in whom the people have greater faith. 

Urbanisation and Spatial Planning

Prof. Moonis Raza, Vice-Chancellor, University of Delhi, delivered the Convocation Address at the Sixth Annual Convocation of the School of Planning and Architecture (Deemed to be a University) on 4 November, 1987. In a definitive address, Prof. Raza described the evolution of a system of settlements as a regional rather than an urban or a rural phenomenon which could be defined as the reorganisation of the space through the redistribution of population among a hierarchical system of settlements along a continuum in response to vertical shifts within the workforce of the regional economy. Excerpts.

Urbanisation is intrinsically linked and irrevocably intertwined with the developmental process, as an essential strand in the anthropogenetic component of the contemporary eco-systems. A scientific analysis of the organisation of space in current urban studies is seriously constrained by the underlying assumption that urbanisation is essentially an "urban" phenomenon, reflected primarily in the morphology and dynamics of urban settlements. Once this erroneous proposition is uncritically accepted,

continue to elude the grasp, for the cause-effect complexes are embedded in the system of settlements as a whole and not only within its urban or rural segment. Evolution of a system of settlements as a process should, therefore, be identified as a regional rather than an urban or a rural phenomenon and may be defined as the reorganisation of space through the redistribution of population among a hierarchical system of settlements of various sizes and having varying mixes of urban/rural attributes along a continuum

Convocation

apparently on semantic grounds, the holistic spatio-temporal process is also necessarily assumed to be segmented; and the urbanists proceed to dissect with their sophisticated scalpels the head of a beheaded cadaver. Going beyond a city to a system of cities hardly brings about a qualitative change; for the feet are still not on the terra firma of the regional economy, and one tends to flutter ones ineffectual wings only in the rarified upper stratum. The causal relationships

in response to vertical shifts within the workforce of the regional economy. Urbanisation emerging at a specific historical stage in the evolution of the settlement system, should thus be viewed as a process generated within the system of settlements which integrate the tiny hamlets and the metropolises through interactive mechanisms, and exerting its impact on the entire system—from the Kafilas of the transhumant Gujjars to the Chawls of Bombay.

The relationship between the

vertical shifts in the work force, on the one hand, and of its horizontal mobility, on the other, is of crucial significance in the development process. It is through this complex system of interactions that the changing organisation of space responds to the dynamics of the development of productive forces. The histogenesis of urban settlements in most parts of the orient clearly indicates that the earliest towns emerged within the womb of neolithic communities in response to the emergence of inter-sectoral diversification therein, a process accompanied in most cases by the generation of agricultural surpluses and its appropriation by the owners of land. With the growth of handicraft industries and of tertiary activities, the urban segment acquired a position of significance in the settlement hierarchy during the ancient and the medieval periods. There were, for example, 3,200 towns (qasba) and 120 cities (Shahar) in the India of 1586 as recorded in the classic Ain-i-Akbari. It was this historically determined process of urbanisation going hand in hand with the growth in non-primary activities which was disrupted during the colonial period by the suction mechanism of imperialist exploitation. It has been, for example, suggested that the proportion of urban to total population in India was higher at the end of the seventeenth century than at the end of the nineteenth. The self-reliant development process in India since our tryst with destiny in 1947 was directed towards the elimination of the colonial distortions in the structure of the economy and that of the settlements.

The size and the complexity of the Indian system of settlements, as we find it today, is a function of firstly, the large size of the country; secondly, the geographical diversity

therein; thirdly, the great chronological depth of its historical tradition; fourthly, the temporal continuity along with spatial discontinuities of the settlement process; and lastly, the stagnant decay of the system during the period of colonial rule. The country is as large as Europe minus the USSR. The extent of diversity in the natural environment is of an astonishingly high order—ranging from the senile topography of the Deccan to the youthful contours of the Himalayas, from the system of highest peaks to the unvarying monotony of the extensive plains, from the intricate maze of channels in the delta to the almost complete absence of surface flow in the Thar, from the dense growth of tropical forests in the north-east to the vast tracts without a blade of grass. The tradition of settled living in this land mass of continental dimensions goes back at least to the fourth millennium BC; and, not very unfrequently, a modern neighbourhood rests on the strata of the ochre ware or the northern black pottery. The urban processes are rooted at least in the third millennium BC, and the oldest of the extant towns of the world—Varanasi—stands in line with a Corbusier creation. The tradition has shown a unique continuity but its cores, nuclei and its spatial spread across the vast expanses of the country have been changing in the kaleidoscope of time. The impact of colonial rule was qualitatively different from earlier processes in as much as it distorted and, in some aspects, inverted the development process, and, as a consequence, the dynamics of spatial organisation froze into immobility and the system of settlements wilted in an ethos of stagnant decay.

It is obvious that the spatial structure of the colonial economy, which corresponded with the

requirements of a centrifugal suction mechanism of imperialist exploitation, was unsuited to and incapable of responding to the requirements of independent and self-reliant development. The non-economic constraints on the development process having been removed with the achievement of political independence in 1947, the country faced the challenge of moving away from 'structural underdevelopment' to all-round development by organizing the space economy in correspondence with the requirements of regional and national development.

The history of thwarted technological change in colonial India, however, continued to exert considerable influence and imposed serious constraints on the choice of technology in the post independence period which in turn determined the patterns of spatial organisation. While in the developed countries of the West, the endogenous development of higher technologies led to the liquidation of the lower ones, which had been rendered obsolete in the process, the exogenous imposition of higher technologies in isolated enclaves of dysfunctional development in India permitted the stagnant persistence of lower forms in a checker board of diverse levels of technologies which co-existed in the imperfectly integrated organism. The bullock cart and the jumbo-jet, the wooden plough and the tractor, the charkha and the textile mill—all these existed and continue to exist simultaneously in the amorphous and fragmented system of modified underdevelopment. The dualism in the technological front has its inevitable manifestation as rural-urban dichotomy and as a fracture in spatial organisation. The growth impulses generated through the market mechanism at the few urban nodes because of the concen-

tration of high income yielding employment (including the governmental tertiary sector therein), have tended to get impounded, mostly within the urban limits instead of getting diffused particularly in the depths of the rural hinterland. The Bombay-Ratnagiri or the Delhi-Mewat dualism, reflecting technological advance in the urban agglomeration coupled with agricultural backwardness in the neighbourhood, has been duplicated on a large scale on the economic map of India.

The process of industrialisation in the country continues to be weak, dis-articulated and regionally concentrated around a few urban conurbations. Its weakness is reflected in the small magnitude of its share in the workforce, which continues to be alarmingly low. Its disarticulation is revealed in the lack of correspondence between spatially linked clusters of industrial activity, on the one hand, and technologically linked clusters on the other. The extent of regional concentration is indicated by the fact that industrial licenses continue to be concentrated only in a few favoured locations and only four of these conurbations (those of Calcutta, Bombay, Delhi and Madras) accounted for a large share of such licenses.

The urbanisation process in India has been essentially constrained since independence, on the one hand, by the highly disparate agricultural base with islands of the green revolution surrounded by an ocean of rural backwardness and, on the other, by the anaemic as well as disarticulated process of industrialisation in the country. The urban centres continue to be, by and large, stultified and dysfunctional—mainly concerned with services rather than with production. With a substantial primary

sector, with a weak secondary sector and a bloated tertiary sector, the great majority of these towns are floundering in the quicksands of the "bazar economy", continuing to devour without digesting surplus labour from the hinterland by their unique capacity to involute—their growth continuing, as in the case of some of their counterparts in Latin America, to be unproductive and economically irrational". The economic base of Indian urbanisation continues to be its Achilles heel.

The thwarted and stunted character of Indian urbanisation is reflected, firstly, in the exceptionally low share of the urban population to the total population, approximating to the average for the continent of Africa minus the Republic of South Africa; secondly, in the slow rate of growth of the urban population relative to the total population; thirdly, in its "top heavy" structure which is becoming increasingly top heavy; and fourthly, in the sharp gradients of their areas of influence giving them an enclave character, which even in the case of project centres of heavy industry reflect the intensification of the urban-rural discontinuity so that one sometimes moves from the world of the most advanced ferrous metallurgy to the realm of shifting cultivation, traversing four millennia in fifteen miles.

The inadequacies of the industrialisation—urbanisation process in India have been referred to at some length in order to bring out the inescapable conclusion that the third world is suffering not from too much of urbanisation but from too little of it, not from too much of industrialisation but from too little of it. The lesson that the developing countries have to learn from the historical experience of the developed ones does not lie in

the rejection of urbanisation but in its regulation, not through the market mechanism but through social controls, not through maximisation of private profit but through the optimisation of social benefits. The technical answers to questions relating to low cost housing, pollution control, public transport, filtered water, recycling of sewerage and waste, provision of open and green spaces, public health, hygiene and sanitation are all quite well known. The hiatus does not lie in technology but in social organisation, which has shown a unique incapacity to implement these technically feasible solutions. This is crux of the matter. Some Don Quixotes of the developed and some Sancho Panzas of the developing world are striking their lances at wind mills!

The national settlement policy must take note of the human condition in the contemporary world wherein the integration of the world has proceeded along with its fragmentation. The dialectical relationship of these two aspects of the same process must be fully understood. Mankind has to come to terms with the globalization of society and the gulf between parochial perception of narrow minds and the concerns of a one-world reality must be bridged.

The spread of modern industrialization had already, towards the beginning of the nineteenth century, replaced the aggregate of closed or semi-closed systems of the pre-capitalist formations by a loosely integrated world market. The peasants of Asia and Africa, living for millennia in the isolated small world of petty production, were used to natural calamities like floods and droughts, cyclones and earthquakes but were for the first time exposed to blind forces of the market which they did not know. The suction

mechanism of international exploitation extended its tentacles to the remotest hamlet and united the developed and the underdeveloped in a world economy. Advances in transport and communication during recent years have further strengthened such trends, have brought the entire world to our doors and have made everybody everybody's neighbour. Walls have crumbled; and ideas ride the winds. A poem, created on the Left Bank today, provides spiritual sustenance to young scientists in the Silicon Valley or Novosibirsk the next day. The findings of a research project in the Kolar mines reach Trieste in minutes and become inputs in the work of a Nobel laureate, whose words are heard with bated breath in Tokyo, Princeton and Oxford over the weekend. The agro-biological researches in Mexico provide the basis for the green revolution across the oceans in India and Pakistan. The heartbeat of the young in Europe become faster on the rhythm of African drums, or the swara of the Indian sitar. The world has become one indeed!

The integration of the globe is unfortunately accompanied by a fragmentation of the human condition, which needs to be distinguished from differentiation. While differentiation articulates and reflects diversity, fragmentation generates and sharpens disparity. While differentiation of an integrated world is a function of development, fragmentation of the world has been a function of the development of a few have-nations proceeding along and causatively linked with the underdevelopment of the mass of mankind. This is the most agonizing tragedy of our time; for development like freedom is indivisible. The industrial revolution marks the watershed in history. The surpluses generated by the sweat and toil of people all over the world, since

then, were swallowed up by the ruling classes of a few nations through colonial suction mechanisms to build industrial empires and transform the rest of the world into their raw material appendage and a market for their goods.

The fragmentation of the world between the industrialized North and the agricultural South has created a serious cleavage in the rural-urban continuum. North is becoming increasingly non-rural with most of its population living in urban settlements; South is being transformed into a large aggregate of villages inhabited by most of the rural population of the world. The percentage share of the population of the more developed countries who inhabit their urban settlements goes on increasing at an alarming rate and getting concentrated in fewer and fewer megalopolises. The North is threatening to become one large conurbation—the cruel and sick city with the anomie and loneliness of an alienated humanity, the windowless silos full to the brim with discarded hopes and nameless fears, the concrete jungles inhabited not by neighbours—neither love nor hate, neither friends nor foes, but by faceless non-persons; data units of an animated demography. Was it for this that Prometheus brought fire from the heavens and Visnu churned the oceans!

There are three altars in this big city—one each for the revered gods of an industrial capitalism run amuck—economies of scale, of agglomeration and of urbanisation. The industrial revolution ushered in the era of the factory city—smoke belching chimneys rising over working class slums, the refuge for expropriated peasantry in an alien world. Viewed in the context of history, the emergence of the industrial city was a positive step in the right direction. It converted the vertical shift in the work force from the primary to the secondary sector into horizontal mobility from the rural to the urban settlements. The city was thus an instrument of history and the three-fold economies provided the *raison d'être* for this historical process.

The scientific-technological revolution of our time has, however,

transformed the situation qualitatively. The micro-chip has taken quite a bit of the wind out of the sail of the economies of scale. A highly skilled white aproned work force of two figures working in a villa within a park may produce higher value added than a blue collared work force of four figures breathing polluted air in the jungle of chimneys of a four acre factory. It is not being suggested that the small is always and necessarily beautiful. The argument is based on the realization that the scientific-technological revolution has made it possible for economies to be available along the whole spectrum of scales. It is, therefore, not surprising that the North is increasingly shifting the resource-based, large scale polluting industries to the South and is concentrating instead on the innovative highly skilled, R and D based systems wherein the laboratory imperceptibly merges into the production line. The "clean" scientific-technological revolution, unfolding in the North is pushing the polluting industrial revolution into the South. By the time the North is in the twenty first century, the South would be struggling into the nineteenth.

The autonomy of the shopping plaza from the residential neighbourhood and of the latter from the industrial area has already been made possible by qualitative improvements in short-range transport. The home computer has brought about an information revolution; and interconnected terminals of large systems make it possible for same economies to become available in small and medium sized settlements as well. The perspective for the twenty first century is, therefore, not necessarily of cannibal megalopolises swallowing up smaller specimens of their own species but of a balanced and humane system of settlements wherein the large, the medium and the small flourish in symbiosis. There is too much of urbanisation in the North and too little of it in the South. The polluted city of the North and the filthy village of the South are two sides of the same coin. The former is sick with affluence, the latter is diseased with poverty. The former has the paunch of the overfed, the latter has the bloated belly of the scurvy

stricken; the former needs slimming, the latter needs nutrition. Glorification of the former is inhuman and romanticization of the latter is cruel. There is no escape from one to the other. The blacks in the blind alleys of Harlem as well as the hippies in the suburbs of Kathmandu have learnt this bitter lesson the hard way.

The contradiction between the integration of the globe and its fragmentation has to be resolved expeditiously. The fracture in the human condition brought about by the hammer strokes of industrial capitalism must be healed by the knowledge provided by the scientific-technological revolution of our times. This is necessary not only in the interest of those who have been and continue to be at the receiving end but of mankind as a whole. This calls for a new, *weltanschauung*—a new world view. Deterministic as well as consumeristic cobwebs must be cleared from our thinking apparatus. Those who consider poverty to be nature's gift which the teeming millions of the developing world must inescapably endure are as much in the wrong as those who, in their misplaced endeavours to conquer nature, are destroying the earth as the home of man. It is as naive as well as dangerous to seek solace in the spurious spirituality of poverty as to seek meaning and purpose at the consumerist counters of affluence. The sophistication of the city must be combined with the earthiness of the village with a view to restore the rural urban continuum in the living style of mankind.

The work of the graduates who go out into the wide world today has to be imbued by such a humane vision. The cities that they plan, the houses that they build, the factories that they erect, the transport network that they establish, the landscapes that they create and, above all, the dreams that they dream—all these should contribute to the deepening of the humanisation of the *homo sapiens* through the mutual interpenetration of form and function, means and ends, work and knowledge so that the good, the beautiful and the true become one in the spirit of man. □

Madras Varsity to Offer New Courses

The Academic Council of the Madras University is reported to have recommended to the Senate the institution of six new diploma courses in law to be offered through the Institute of Correspondence Education in the university. It also approved the regulations and syllabi for these courses. The courses relate to labour law, taxation law, insurance law, mercantile law, Indian constitutional law, and criminal law including evidence. The revised regulations and syllabi relating to M A Criminology were also approved to take effect from the academic year 1988-89.

The Academic Council also recommended the institution of the following courses: Degree of Bachelor of Fine Arts in Painting and also in Sculpture of three years' duration open for higher secondary certificate holders; three part-time degree courses of one-year duration each—B.Sc. Visual Communication Design for holders of diploma in Commercial Art, Bachelor of Fine Arts in Painting for holders of diploma in painting, and a Bachelor of Fine Arts in Sculpture for holders of diploma in sculpture. The regulations and syllabi for these were also approved to take effect from the year 1987-88.

Ford Foundation Grant for Anna Varsity

The Ford Foundation has approved a grant of \$ 2,30,000 (Rs. 30 lakhs) to the Centre for Water Resources, Anna University, Madras, for taking up action research study in the rehabilitation and management of small reservoir based irrigation (tank irrigation) systems in Tamil Nadu over a period of three years. This grant

is stated to be in continuation of an earlier study made by the centre on tank modernisation programme (a Government programme financially supported by European Economic Community), its problems and issues as well as monitoring and evaluation, with financial support from the Ford Foundation.

In the programme earlier undertaken by Anna University, water users were involved in decision-making as an experimental measure, but only in a limited way. The proposed project envisages more participative approach in which the project group would help organise water users, prepare them for negotiation with PWD and other officials at the planning and construction stages and provide continuing support upto the first post-rehabilitation irrigation season. Four of the tanks scheduled for rehabilitation under the earlier programme would be selected and the results obtained from the field study would be compared with those being achieved under the earlier programme.

Digital Language

The researchers at the Universal Digital Communication Research Institute (UDCRI), New Delhi, have developed a new digital language with alphabets from zero to nine. According to UDCRI Director, Mr. Abasama, the new system will cut across the language barrier as all languages in the world can be translated into the basic digital language that can be handled by a computer. He said that development of the digital language is the first step "toward realisation of the dream of on-line automatic translation computers which would make it possible for people speaking different languages to converse without difficulty."

The Institute has already produced digital dictionaries for English, Hindi and Sanskrit. Similar dictionaries for other Indian languages are also to be developed.

Health Science Institute Planned for Ludhiana

The Christian Medical College (CMC), Ludhiana, has drawn up a proposal to establish an Institute of Health Science in collaboration with the Punjab Agricultural University. Dr. Zakaria, Principal of the CMC, alongwith Dr. William A. Robinson, Professor of Medicine and Head of the Department of Oncology, University of Colorado Medical School, Denver, USA, recently met Dr. Sukhdev Singh, Vice-Chancellor of the PAU to explore the possibility of collaboration from the various departments of the PAU allied to health. The Vice-Chancellor is reported to have agreed to discuss the proposal with the concerned faculty.

Admission to MD Courses

The Sree Chitra Tirunal Institute for Medical Sciences & Technology, has announced that the entrance examination for admission to the Post-doctoral programmes leading to DM Cardiology, Neurology, M.Ch Cardiovascular thoracic surgery, Neurosurgery, and post-doctoral certificate course in Anaesthesiology and Radiology will be held at the Institute on 21st and 22nd December (Monday and Tuesday) instead of the dates advertised earlier. One seat each will be reserved for SC/ST candidates in the DM Neurology and M. Ch Neurosurgery course during the academic session 1988.

News from Agril. Varsities

National Seminar on Agro-Forestry

The Research Directorate of the Narendra Deva University of Agriculture and Technology, in collaboration with the Agricultural Society of India, recently organised a 3-day National Seminar on "Agro-forestry"—its present status and scope for future development in farming systems". Inaugurating the seminar Dr Kirti Singh, Vice-Chancellor of the University, suggested that fruit trees should be included as an important component in the afforestation programme to cope with the problem of malnutrition widely prevalent in the rural areas. In his presidential address, Dr. D. K. Das Gupta, Vice-Chancellor, Bidhan Chandra Krishi Vishwavidyalaya, Kalyani, gave a brief history of the Agricultural Society of India and emphasised the need for concerted efforts in making agro-forestry a peoples' programme.

Delivering the valedictory address, Mr. R. Venkatnarayanan, Member Secretary, Waste Lands Development Board, emphasized that three main issues should be kept in view while implementing the agro-forestry project. These are upgrading the land, more productivity on the farms, and security in adversity to the poor farmers.

Some of the important recommendations made at the seminar were asunder :

- (i) Need for establishing seed centres for raising genuine plant material. Tissue culture techniques should be used for large scale multiplication of genuine, rare

and disease free plants ; and

- (ii) The Agricultural Universities should be assigned the task of developing manpower, and at the same time, a mechanism should be worked out for the employment of such trained personnel in the agro-forestry projects.

All the plantation programmes should be linked to some kind of industry for the utilization of the end product. Inclusion of fruit as a component in the agro-forestry for quick returns was also recommended.

HAU to Restructure R & D Programmes

The Haryana Agricultural University (HAU) is reported to have decided to restructure its research and extension programmes "with a view to providing a boost to the on-going need-based programmes and to make farm research more relevant to the ecology of the region." According to Mr. M. S. Rathee, Vice-Chancellor, "the procedure for the transfer of technology from the research farms of the university to the farmers fields is being reviewed to further bridge the gap. To do so, the HAU would seek assistance of the Indian Council of Agricultural Research (ICAR)."

The State Chief Minister, Mr. Devi Lal, had, during his recent visit to Hissar, asked the Vice-Chancellor and HAU scientists to develop agricultural technology suited to the day-to-day needs of

the small and marginal farmers, landless labourers, rural artisans, women and youth, thereby correlating HAU expertise with the common man and his problems. He has asked the HAU engineers to fabricate and develop prototypes of farm machines for practical use by the small and marginal farmers.

Mr. Rathee said that during the recent sample review of the research and extension programmes critical gaps between actual and potential farm yields at the current level of available technology were noticed. These gaps must be filled by removing the constraints. The state government is keen to extend full cooperation in this regard, he said.

US Envoy Visits PAU

US Ambassador in India, Mr John Gunther Dean, recently visited the Punjab Agricultural University to see the progress of PI-480 projects functioning at the PAU. He discussed with the Vice-Chancellor, Dr. Sukhdev Singh and Deans and Directors of the University, the details of the projects (i) Germplasm Collection, Maintenance and Evaluation of Wheat; (ii) Strengthening of research on breeding for resistance to Karnal Bunt, and (iii) All-India Coordinated Research Project on Intracellular Blood Protista with particular reference to Immune Prophylaxis and Control

Dr. Sukhdev Singh apprised the Ambassador of the Karnal Bunt disease of wheat which has been reported frequently. Low infection of 5 per cent may render the produce unsuitable for human consumption. The Vice-Chancellor informed that a new technique for screening against this disease has been developed at PAU which involves culturing of pathogen in the laboratory and inoculation in

the field for Karnal Bunt infection and standardization of required humidity and temperature by using mist-spray

Regarding the other project on Germplasm Collection of wheat, Dr. Sukhdev Singh said that under this project 9562 germplasm collections of bread wheat, durum wheat, triticale and wild species and genera have been collected. These materials are being evaluated and screened for various selected characters such as spring/winter habit resistance to yellow and brown rusts Karnal bunt, loose smut and powdery mildew and are also being evaluated for protein and lysine content

The Ambassador also visited the Department of Animal Science and saw the elite buffalo herd maintained under the project 'All-India Coordinated Research Project'. He also visited the Crop Museum in the Department of Plant Breeding, and Museum of Rural Life of Punjab.

Dr Sukhdev Singh presented a set of PAU publications to the Ambassador

New Wheat Variety

Punjab Agricultural University wheat breeders are reported to have advised farmers to grow the PBW 34, PBW 120, PBW 154 and WL 1562, varieties, which are highly resistant to Karnal bunt and rust.

The durum wheat variety 34 has bold, hard and lustrous grains and its average yield is 22 quintals an acre. The bread wheat variety PBW 120 has amber and hard grains and gives an average yield of 22 quintals an acre. WL 1562 is a double dwarf variety with an average height of 82 cm. It has an excellent chapati making quality

with an average yield of 20 quintals an acre.

A new wheat variety PWB 154 has been released this year. It has wide adaptability and possesses amber, very bold, hard, uniform and lustrous grains. It gives 21 quintals of yield an acre.

Dr. Khem Singh Gill, Director, Extension Education, claims that the cultivation of these varieties in bunt prone areas will go a long way towards minimising losses due to Karnal bunt. His stress is on timely sowing of wheat varieties to minimise the incidence of Karnal bunt. These varieties can be sown from October 25 to middle of November in Karnal bunt prone areas

For rainfed areas of Gurdaspur, Hoshiarpur and Ropar, farmers are advised to grow the PBW 65 wheat variety which is resistant to loose

smut, Karnal bunt, brown rust and gives high yield.

For late sowing, they are advised to specially grow WL-1562, Sonalika Multiline-1 and TL-1210. They are further advised to treat the seed before sowing with Thiram at the rate of 3 gram per kg. of seed to avoid the entry of Karnal bunt pathogen into unaffected areas.

WL-2265 is another single dwarf wheat variety which can be sown in the State's rainfed areas. The average yield of this variety is 13-14 quintals an acre.

Dr Gill advises farmers in rainfed areas to apply aldrin at the rate of 4 ml-30 EC per kg seed. To control loose smut the seed should be treated with Vitavax after aldrin treatment. He also pleads for a balanced use of fertilisers in rainfed areas to achieve better yield

News from Abroad

Innovative Methods in Technological Education

Unesco and the European Society for Engineering Education (SEFI) organized an international symposium on innovative methods in technological education at the University of Paris-Sud XI in Orsay (France) from 21 to 24 September. The aim of the symposium was to bring together world experts in the latest methods of the teaching of technology and those concerned with the problems of designing and running training programmes in both industrialized and developing countries. The participants, about 200, included 50 specialists from developing countries who were able to take part with Unesco's help.

Discussions during the symposium covered a number of topics, such as teaching media choice, computer-aided learning, practical work and courseware development, experience and problems of innovative teaching methods in developing countries, inter-institutional and international collaboration, and innovative education for industry and the technical professions.

The participants took the opportunity to exchange views and information on a variety of innovative methods ranging from programmed texts to distance learning via satellite, and on studies and research on

better adaptability of these methods. Particular attention was given to the specific problems of developing countries, particularly with regard to training, finance and the cost-effectiveness of alternate delivery systems.

The symposium ended with a plea to Unesco to continue and increase its activities in this field and, in co-operation with other international bodies, to provide greater assistance to Third World countries in the introduction of innovative teaching methods in their technological and technical education programmes.

Savings Plan for Tuitions

The US Senators, Edward M. Kennedy and Claiborne Pell recently introduced a proposal in the Senate that would permit families to finance the cost of college through tax-free U.S. savings bonds. Interest would be tax free on bonds used to pay for college creating a tax incentive to save for college.

According to Kennedy and Pell the use of savings bonds has several advantages over other state and federal proposals to help parents save for college. First, savings bonds already are widely available and easily accessible to families. No new agencies need be created to run the program. The program would be risk-free because savings bonds are backed by the U.S. government.

The bonds could be used for any other expense if a child chose not to attend college—all that would be lost would be the tax advantage. The bonds also could be used at any higher education institution—students would not be restricted to a single state or college, as with some plans

Sports News

Varsities Team for Nehru Hockey Tournam

M P. Singh of Panjab University has been named as the Captain of the Indian Universities Hockey (M) Team participating in the Jawaharlal Nehru Hockey Tournament being held in New Delhi from Nov. 14 to Dec. 8, 1987. The team was selected at the three day trials organised at Delhi University from Nov. 5 to 7, 1987. Other members of the team are: A. Thomas (Bombay); Vimal Seth (Delhi); Arvinder Singh (PAU); Joga Singh (Delhi); Gurbir Singh (Panjab); Pradeep Singh (Guru Nanak Dev); Sheeraz Alam Azmi (Aligarh Muslim); Karanveer

Singh (Delhi); Kamal (Bhopal); Parvinder (Lucknow); S. Asim Zafar (A Muslim); Raj Kumar (Bang Surjeet Singh (Panjab); Sar Singh (Meerut); and G.P. E (Delhi).

The players received training under the supervision of Mr. J. Ali, Hockey Coach from Al Muslim University. Mr. P. Singh, Director of Physical Education, Khalsa College, Delhi University has been nominated as manager of the Team.

ASSOCIATION OF INDIAN UNIVERSITIES AIU HOUSE, 16 KOTLA MARG, NEW DELHI-110002

Applications from Indian citizens are invited for the following post in prescribed form available on payment of Rs. 2/- from the Office of the Association.

Research Officer

Pay Scale : Rs. 2200-4000 (Revised)

Qualifications

Essential : Good Master's Degree in Economics, Education or Social Sciences.

Desirable : Doctorate in Education or in Economics, with 5 years' experience. Research preferably in the area of Economics of Education.

Job Description

The incumbent will be responsible for handling research projects and organising seminars, conferences and workshops relating to university education.

Persons with experience of working in university level institutions will be preferred and can be considered on deputation terms.

The post carries Dearness and other allowances generally at the Central Government rates. Total emoluments at the initial of the Scale amount to Rs. 3256/-, including HRA and Special Allowance. Higher start in the prescribed pay scale may be given in deserving cases. Relaxation in any of the requirements may be made in exceptional cases. The post is for one year in the first instance but is likely to continue on a regular basis. The Association reserves the right not to fill up the vacancy advertised, if the circumstances so warrant. SC/ST/Ex-service-men will be given preference. Canvassing in any form by or on behalf of a candidate will be a disqualification. Outstation candidates called for interview will be paid single second class rail fare to and fro by the shortest route.

Applications complete in all respects should reach the Office by 30 November 1987. Persons already in service should apply through proper channel. Applications received after the last date or without complete information will not be entertained.

AIU Library

Established in 1965, the AIU Library has acquired over the years a valuable collection of books and documents on Higher Education. Among the topics prominently represented are Educational Sociology, Educational Planning, Educational Administration, Teaching & Teachers' Training, Examinations, Economics of Education and Country Studies. Developing fields of Adult Education, Continuing Education and Distance Education, and Educational Technology are also well stocked. The Library is particularly strong in its collection of reports whether they are on the setting up of different universities or on the state of Higher Education. Files of Annual Reports of different universities are also maintained. Readers are kept informed of the latest acquisitions through our column 'Additions to AIU Library'.

The Library also receives about a 100 periodical titles on Higher Education. All these are indexed regularly and a select list appears every month as 'Current Documentation in Education'.

Doctoral Degrees awarded during the preceding month are reported as 'Theses of the Month' while registrations made for such degrees are flashed as 'Research in Progress'. Bibliographies are also compiled and supplied on demand.

Research scholars and students of education are welcome to use these resources. The Library is open from 9-00 a.m. to 5-30 p.m. Monday through Friday. Access can also be had through inter library loan for which requisition must be made through your Librarian.

ADDITIONS TO AIU LIBRARY

Asratyan, F.A. and Simonov, P.V., ed. *Learning brain*. Moscow, MIR Publishers, 1986. 222p.

Association of Indian Universities, Delhi, *Handbook of medical education, 1987*. Delhi, Author, 1987. xvii, 322p.

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Bengalee, Mehroo D. *Facing modern educational challenges A teacher's manual*. Bombay, Sheth Publishers, 1983. x, 100p.

Cahill, Bruce, ed. *Unesco in Asia and the Pacific: 40 years on*. Bangkok, Unesco, 1986. discontd.

Goheen, Robert F. *Human nature of a university*. Princeton, University Press, 1969. 116p.

Gupta, Shyam Ratna and Schottli, Urs W., ed. *Good citizenship: Rights, duties, responsibilities*. New Delhi, Roli Books [c 1987] xvi, 136p.

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India. University Grants Commission. *Report of the Committee for framing regulations under UGC act for charging of fees by colleges*. Delhi, Author, 1986. v, 88p.

..... *Revised guidelines on the scheme of autonomous colleges*. New Delhi, Author, 1986. vi, 90p.

International Conference on Education 40th Session, Geneva, 1986. *Final report*. Paris, Unesco, International Bureau of Education, 1987. 147p.

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Khashu, M.K. *Education, technology and development*. Srinagar, Regional Engineering College, 1982. vi, 111p.

Mathur, L.N. *Dramatic moments in Ranji Trophy*. Udaipur, Author, 1987. 184p.

M.S. University of Baroda. Centre of Advanced Study in Education. *Study of vocationalization of education at the higher secondary stage. A research project*. Baroda, Author, 1985. 257p.

Murphree, M.W. and Ngara, E.A., ed. *Inter-university cooperation in Eastern and Southern Africa*. Harare, Association of Eastern and Southern Africa University, 1984. vi, 205p.

National Conference on Alternative Development Strategies for India, Delhi, 1979. *Development goals and strategies: The next decade—Report*. Delhi, Society for International Development, 1979. iii, 84p.

Padmanabhan, C.B. *Inter-state variations in financing of education: A regional dimension*. New Delhi, N.I.E.P.A., 1986. 28p.

Patel, Babubhai J. *Sardar Vallabhbhai Patel: His life and times*. Ahmedabad, Sardar Vallabhbhai Patel Memorial Society [c 1986] 51p.

Ramakrishnan, Ganapati. *Community college for India*. Madras, Institute for Development Education, 1980. xvi, 80p.

Seminar on Involvement of Women in Planning and Management of Education, Bombay, 1987. *Report*. Bombay, S.N.D.T. Women's University, 1987. discontd.

Sobti, M.L. *Financial code for university systems*. New Delhi, Vikas [c 1987] xxiv, 424p.

Somasundaram Pillai, J.M. *University's environs: Cultural and historical: A silver jubilee souvenir of the Annamalai University*, 1963. 204p.

Srivastava, R.S. *Aged and the society*. New Delhi, Citizenship Development Society, 1983. x, 89p.

Taneja, S.R., ed. *Science to instruments: A kaleidoscopic view*. Chandigarh, C.S.I.O. 1983. 151p.

Tilak, Jandhyala B.G. *Educational finances in India*. New Delhi, NIEPA, 1987. vi, 73p.

Wallace, James. *Brahman-EMC: Science and the mystical, secrets of the universe*. New Delhi, Allied, 1985. xiv, 251p.

THESES OF THE MONTH

A List of Doctoral Theses Accepted by Indian Universities

HUMANITIES

Language & Literature

English

1. Chellammal, E. *Southernness in the novels of Carson McCullers*. Anna.

2. Elamaran, M. *A comparative study of Robert Burns and Bharathidasan*. Madurai.

3. Mahanta, Dharendra Kumar. *Dualities in Shakespeare's problem comedies*. Gauhati. Dr. Hirendra Nath Gohain.

Russian

1. Narendran, V. *Mahabharata and War and Peace: Creations of necessity*. Karnatak. Dr. D.B. Dhawan.

Sanskrit

1. Gurunath, Hampiholi Mahesh. *A comparative study of Bhramati vivarana and varthika schools*. Karnatak. Dr. B.R. Modak.

2. Pande, Rashmi. *Bharatiya darshan mein parmanu*. Panjab.

Hindi

1. Bhupal Singh. *Yug chetna ke sandarbh mein Vinaypatrika aur Gitavali ka muhyankan*. JNU. Prof. (Mrs.) Savitri Chandra.

2. Jain, Komal. *Nai kavita ke sandarbh mein Sarveshwar Dayal Saxena: Ek sahityik anusheelan*. Vikram. Dr. Rammurti Tripathi.

3. Jaiswal, Tej Narayan. *Dinker ka sahitya mein samajik evam rajnitik tatva*. Osmania.

4. Joshi, Pushpa Yeshwantrao. *Renu Pendso ke anchalik upanyson ka tulnatmak adhyayan*. Osmania.

5. Laxminarsaiyah, R. *Chhayavad aur Bhava kavita mein prakriti chitran*. Osmania.

6. Manju. *Mahila lekhikaon ke sathottari kahani sahitya mein parivarik vighatan*. Panjab.

7. Pande, Sucheta G. *Sant kavya parampara ke paripekshya*

mein Namdev ke Hindi sahitya ka anusheelan. Nagpur. Dr. Ghanshyam Jha.

8. Rudravajhala Suman Lata. *Astihachap tatha Talpaka ke kaviyon ka tulnatmak adhyayan*. Osmania.

9. Sharma, Braj Mohan. *Mahakavi Nanddas: Antar kathayen evam adhyayan*. Gulbarga. Dr. S.M. Kappikeri.

10. Tripathi, Om Prakash. *Hindi ke pragtisheel lekhan ke parampara ke sandarbh mein Ganga Prasad Mishra ka katha-sahitya ka anusheelan*. Panjab.

Urdu

1. Atharunisa Begum. *Ahed-E-Asaffahi mein Urdu natia shairi*. Gulbarga. Dr. Razzak Farooky.

2. Khan, Naushabatul Fatema. *Kanhayyalal Kapur: Hayat aur karnama*. Nagpur. Dr. M.A. Rahamutalla.

Assamese

1. Mahanta, Prasulla Chandra. *The emergence and growth of Assamese middle class and its role in socio-economic and cultural transformation in Assam during British Rule, 1826-1947*. Gauhati. Dr. Hirendra Nath Gohain.

Oriya

1. Jena, Subas Chandra. *Fakir Mohananka rachanare hasyarasha*. Utkal.

2. Mishra, Ajaya Kumar. *Creative/poetic mind of poet Radhamohan Gadnayak*. Utkal.

3. Mishra, Sanjukta. *National consciousness in the literature of the Mayadhar Mansingh*. Utkal.

4. Samanta, Ratnamanjari. *Thoughts and consciousness in Oriya one act plays*. Utkal.

Marathi

1. Muley, Vandana. *Social and political thoughts as reflected in the Dramas of J.P. Khadilkar*. Durgawati. Dr. (Smt.) Kamal Notke.

2. Warashashiwar, P.P. *N.C. Phadke yanchya kadab yati istri vyaktirekha: Ek abhyas*. Nagpur. Dr. M.R. Joshi.

Tamil

1. Malathy, G. T.M.C. *Raghunathan's padalpu Ilakkiyangal*. Madurai.

2. Santhanam, M. *Peractriyar uraithiran*. Madurai.

3. Sundaram, U. Meenakshi. *An analytical study of childrens folk songs of Tirunelveli District*. Madurai.

Malayalam

1. Padmanabha Kurup, A. *The poetry of Sree Narayana Guru : A literary and philosophical study*. Calicut. Dr. C.P. Achuthanunni.

Kannada

1. Vishwanathayya, Yakkundimath Basavaraj. *Basavapoor-vayugad Veerashaiva sahitya*. Karnatak. Dr. S.M.V. Swamy.

Telugu

1. Lakshmi Narayana, V. *Gopichand kathalu-Vyasalu*. Osmania.

2. Raja Rao, M. *A comparative study of Gurazada Appa Rao and George Bernard Shaw*. Osmania

3. Sundara Rama Krishna, A. *The poetical works of*

Venkataparthateswara Kavulu with special reference to Ramayana. Osmania.

4. Venkata Sri Ranga Nayaki, Koganti. *Sambhudasa-Tatvadarsa namu*. Andhra.

Geography

1. Achuta Rao, Tippur Narayan. *Regional development of Karnataka : Achievements, problems and strategies, a spatial analysis*. Utkal.

2. Paranjape, Jyotsna. *A regional analysis of industrial location in Maharashtra and Gujarat, 1961-1981*. JNU. Dr. Kusum Chopra.

3. Prahalad Kumar. *Geomorphological evaluation of environmental degradation and management in Dhauliganga Basin, Central Himalayas*. JNU. Dr. S. Padmaja.

4. Shukla, Kirti. *Rajpur Bhilal Pradesh ke samajik-arthik bhoodrishya mein parivartan*. Ravishankar. Dr. H.S. Gupta.

History

1. Pande, Madhukar N. *Khan deshateel swatantraya lahyanche itihās 1885 to 1947*. Nagpur. Dr. S.G. Kolarkar.

2. Sinha, Yogesh Kumar. *Inter-State and international relations in Ancient India during the seventh century A.D.* Bihar. Dr. Ravi Varma.

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INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited for filling up of the following posts at the Council's Institutes/Centres :

1. At National Institute of Nutrition, Hyderabad

(i) Assistant Director—2 posts

Scale of pay of Rs. 3700-125-4700-150-5000.

Qualifications & Experience

(a) For Post No. 1. (NUTRITION SURVEILLANCE)

Essential : A doctorate or equivalent post-graduate qualification in statistics with original work as evidenced by published papers. Evidence of leadership with 10 years of research/teaching experience in Biostatistics.

Desirable : Experience in analysing data related to Nutrition. Monitoring and Surveillance and other community based nutrition studies.

Job Requirements : The incumbent is expected to monitor and predict nutrition and food situation in the country using the data from NNMB surveys and other factors like health, agriculture and economics.

(b) For Post No. 2 (SPORTS NUTRITION)

Essential : A doctorate or equivalent post-graduate qualification in General Medicine/Physiology/Biochemistry with original work as evidenced by published papers. Evidence of leadership with 10 years research/teaching experience in energy metabolism/sports medicine sports physiology/sports nutrition and allied aspects.

Desirable : Experience in conducting research studies in Sports Nutrition.

Job Requirements : The incumbent is expected to carry out research studies in Sports Nutrition and allied aspects.

(ii) Senior Research Officer—One Post (NUCLEAR PHYSICS)

Scale of Pay of Rs. 3000-100-3500-125-4500.

Qualifications & Experience

Essential : 1st class M.Sc in Nuclear Physics with 6 years experience in research/teaching. In case of candidates possessing doctorate or equivalent post-graduate qualification with original work as evidenced by published papers, two years experience in research/teaching is required.

Desirable : A doctorate in Nuclear Physics and experience in Whole Body or Low Level Radio Active Counting.

Job Requirements : The person to be appointed is expected to handle the whole body counter and carry out nuclear medical studies and low level radio active counting.

2. At the Food and Drug Toxicology Research Centre, Hyderabad

Assistant Director—One Post

(NUTRITION & CANCER PROJECTS)

Scale of Pay of Rs. 3700-125-4700-150-5000.

Qualifications & Experience

Essential : A doctorate or equivalent post-graduate qualification with original work as evidenced by published papers in Biochemistry. Evidence of leadership with 10 years research/teaching experience in co-ordinating and guiding research in the field of Xenobiotics metabolism and chemical carcinogenesis.

Desirable : Ability to co-ordinate and guide research in the field of xenobiotics metabolism and chemical carcinogenesis.

Job Requirements : The person to be appointed is required

to co-ordinate and guide research in the field of xenobiotic metabolism and chemical carcinogenesis.

3. At the National Institute of Cholera and Enteric Disease Calcutta.

Senior Research Officer—One Post—(EPIDEMIOLOGY)

Scale of pay of Rs. 3000-100-3500-125-4500.

Qualifications & Experience

Essential : MBBS degree from recognised university with six years experience (MD with two years experience) in the field of epidemiology & Public Health.

Desirable : M.D. in Epidemiology/Preventive and Social Medicine.

Job Requirements : Planning, execution and evaluation of Research studies in the division of epidemiology and taking part in the training activities of the institutes.

4. At the ICMR Headquarter's Office, New Delhi

Technical Officer—One Post

Scale of Pay of Rs. 2000-60-2300-EB-75-3200

Qualifications & Experience

(a) Master's degree in bio-medical science (Botany Zoology, Pharmacy, Pharmacology, Biochemistry etc.) with at least three years research experience.

(b) Experience in copy-editing, dummy preparation, layout and other aspects of production in a reputed publishing house. Knowledge of printing, layout and other aspects of production (relating to off-set press essential).

Job Requirements : To assist in processing scientific matter for various publications of ICMR including ICMR Bulletin, Annual Report of the Director General and other technical publications.

Age : Below 45 years for Asst. Director/S.R.O. and 35 years for Technical Officer. SC/ST candidates allowed relaxation in accordance with Government of India rules

Allowances as per Central Govt. rules are admissible on above pay scales.

Benefits of pension admissible. Private practice is not allowed. However, NPA, as per rules of the Council is admissible to medical graduates only.

Candidates called for interview for the post of SRO/Tech. Officer will be paid second class return rail fare and for the Post of Assistant Director first class return rail fare, on production of documents.

Applications from employees working in Central/State Govt. Departments, Public Sector Undertakings and Govt. funded research agencies must be forwarded through proper channel.

Application forms can be obtained from the office of the Director General, Indian Council of Medical Research, Post Box No. 4508, Ansari Nagar, New Delhi-110 029 on or before 4th December, 1987. Forms duly completed should be sent to the Director General, Indian Council of Medical Research, Post Box No. 4508, Ansari Nagar, New Delhi-110 029 with a crossed IPO for Rs. 8/- payable to the Director General, Indian Council of Medical Research, New Delhi on or before 15th December, 1987. SC/ST candidates are exempted from the payment.

Incomplete and late application will not be entertained.

INDIAN INSTITUTE OF TECHNOLOGY

KANPUR

Applications are invited for the following posts. The pay scales mentioned against the posts are likely to be revised after implementation of the recommendations of Fourth Pay Commission :

1. Registrar (1 post) — Rs 1500-2500.
2. Administrative Officer (2 posts) — Rs 1200-1900 (one for SC)
3. Asst Registrar (3 posts) — Rs 700-1600 (one for SC and one for ST)
4. Jr Administrative Officer (2 posts) — Rs 700-1600 (one for SC)
5. Estate Officer (1 post) — Rs 700-1600
6. Asst Librarian (1 post) Rs 700-1600 (Reserved for SC)
7. Chief Mechanical Engineer (1 post) — Rs 1500-2500
8. Superintending Engineer (1 post) — Rs 1500-2500
9. Senior Civil Engineer (1 post) — Rs 1200-1900 (Reserved for SC)
10. Liaison Engineer (1 post) — Rs 1200-1900 (Reserved for ST)
11. Asst Liaison Engineer (1 post) — 700-1600
12. Instrumentation Engineer (3 posts) — 700-1600 (one for SC and one for ST)
13. Physical Education Officer (1 post) — Rs 1200-1900 (Reserved for ST. General candidates will be considered if no suitable ST candidate is available)
14. Security Officer (1 post) — 700-1600
15. Coordinator (Training) T O C (1 post) — 1200-1900 (Reserved for SC. General candidates will be considered if no suitable SC candidate is available)
16. Asst Engineer (3 posts) — Rs 650-1200 (one for SC)

Qualifications and Experience

Posts 1 to 5: A good Bachelor's degree in Arts/Science/Commerce/Engineering and a Postgraduate degree or Diploma in Public Administration/Management or recognised qualification as Chartered/Cost/SAS Accountant.

Post 1—Minimum of 15 years administrative experience; Post 2—Minimum of 10 years experience in Civic administration or Stores/Purchase operation; Post 3—Minimum of 8 years administrative experience; Post 4—Minimum of 8 years experience in Stores/Purchase operations; Post 5—minimum of 8 years experience in estate matters;

Post 6— M.Lib. with B. Tech/Master's Degree.

Post 7— A good Bachelor's degree in Mechanical Engineering with a minimum of 15 years experience

Post 8— A good Bachelor's degree in Civil Engineering with a minimum of 15 years experience,

Post 9— A good Bachelor's degree in Civil Engineering with a minimum of 8 years experience.

Post 10— A good Bachelor's degree in Engineering with 8 years experience in Liaison work.

Post 11— A good Bachelor's degree in Engineering.

Post 12— A good Bachelor's degree in Electronics/Electrical Mechanical Engineering.

Post 13— Master's degree in Physical Education with minimum of 10 years experience in Physical Education Training and Coaching.

Post 14— Graduate with 15 years Security Experience or a Deputy S.P., Asst Commandant of the Central/State Police Force or a Commissioned Officer of Army/Navy/Air Force with 6 years experience.

Post 15— B. Tech /Master's degree with at least 8 years experience in rural development activities including organisation of training programmes.

Post 16— Diploma in Civil/Electrical/Mechanical Engineering with at least 13 years experience in works.

Other details regarding preferential/desirable qualifications, experience and service benefits available will be supplied along with the prescribed form obtainable free of charge by sending a self-addressed unstamped envelope of 25 cm x 11 cm to the ADMINISTRATIVE OFFICER II, INDIAN INSTITUTE OF TECHNOLOGY, KANPUR-208016. Last date for submitting completed application is December 15, 1987.

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The application forms duly filled in along with necessary documents and crossed Indian Postal Order(s) of Rs. 10/- in favour of the Registrar, Kota Open University, Kota, should reach this office by 10th December, 1987.

Persons already in employment must send their applications through their employer.

Sl. No.	Subject	Reader 1200-50-1300-60-1900	Lecturer 700-40-1100-50-1600	Speciali- zation
1.	History	1	1	Ancient, Modern or Medieval Indian History.
2.	Indian Culture & Tradition	1	1	Ancient Indian History, Philosophy & Languages.
3.	Political Science	1	2	Political Theory or Indian Government & Politics
4.	Mathematics & Computer Science	1	1	Background of Computer Science
5.	Commerce	1	2	—
6.	Physics	—	1	Theoretical Physics.
7.	Management	1	2	Business Management, Tourism & Hotel Management, Policy Sciences.
8.	Hindi	—	1	Editing
9.	English	1	1	Editing
10.	Economics	1	2	Economic Theory Banking/Rural Economics.
11.	Library Science	1	1	—
12.	Food, Nutrition & Health Management	—	1	—
13.	Journalism	1	—	—
14.	Law	—	1	Labour Law & Personnel Management.

Qualifications

For Readers

Good academic record with Doctoral Degree or equivalent published work. Evidence of being actively engaged in (i) research or (ii) innovation in teaching methods or (iii) production of teaching materials

About five years experience of teaching and/or research provided that at least three of these years were as Lecturer or in an equivalent position.

This condition may be relaxed in the case of candidates with outstanding record of Teaching/Research.

For Lecturers other than Management & Mathematics & Computer Science

(a) A Doctor's Degree or research work of an equally high standard, and

(b) Good academic record with at least Second Class (C in the seven point scale) Master's Degree in a relevant subject from an Indian University or an equivalent degree from a foreign University.

Having regard to the need for developing interdisciplinary Programmes, the degrees in (a) and (b) above may be in relevant subjects :

Provided that if the Selection Committee is of the view that research work of a candidate as evident either from his thesis or from his published work is of very high standard, it may relax any of qualifications prescribed in (b) above

Provided further that if a candidate possessing a Doctor's Degree or equivalent research work is not available or is not considered suitable, a person possessing a good academic record, (weightage being given to M.Phil. or equivalent degree or research work of quality) may be appointed provided he has done research work for at least two years or has practical experience in a research laboratory/organisation on the condition that he will have to obtain a Doctor's Degree or give evidence of research of high standard within eight years of his appointment, failing which he will not be able to earn future increment until he fulfils these requirements.

For Lecturer of Management

Essential : (a) Master's Degree in the relevant subject from an Indian University with at least 55% marks or its equivalent grade and good academic record or equivalent degree from a foreign University.

OR

(b) Master's Degree in Management or Master's Degree in any discipline with Diploma in Management.

For Lecturer of Mathematics & Computer Science

Essential : (a) Master's Degree in the relevant subject from an Indian University with at least 55% marks or its equivalent degree from a foreign University.

OR

(b) Master's Degree in Computer Science or Master's Degree in any discipline with a Diploma in Computer Science or a Bachelor of Engineering in Computer / Electronics and Telecommunications

Additional Qualifications

Experience and proven ability in imparting education through communication media and innovations in distance teaching methods and materials.

Job Requirement

Academic staff of this University will have the following responsibilities :

1. Curriculum and Course Development.
2. Preparation of self-instructional print material
3. Preparation of and participation in the production of audio visual materials.
4. Participation in contact programmes, workshops, week-end programmes, summer institutes, face-to-face teaching, etc.
5. Undertaking of research individual, institutional sponsored, etc.

In addition to pay, the posts carry all allowances and other benefits as per University rules. Higher start [in the prescribed scale may be given in deserving cases on the recommendation of the Selection Committee. Pay scales are likely to be revised.

The University reserves right to increase or decrease the number of vacancies advertised.

Applications received after the last date or without complete information will not be entertained.

It is not obligatory on the part of the University to call for interview every candidate who possess the essential qualifications.

The choice of the committee may not necessarily be confined to those who apply formally.

All the posts are transferable to Regional & Study Centres.

REGISTRAR

INDIAN INSTITUTE OF TECHNOLOGY MADRAS 600035

Advertisement No. IITM/R/7/87

IIT MADRAS is a higher technological institute having ongoing collaborative programmes with several leading technical universities of Federal Republic of Germany, France, USA, UK and Australia. Apart from its regular academic programmes at undergraduate, master's and doctoral levels, the Institute is actively engaged in sponsored research and industrial consultancy.

The Department of Computer Science and Engineering is actively involved in teaching and research in several modern areas of computer science, such as Artificial Intelligence, Fifth Generation Computing, VLSI Design, Computer Networks, Speech Recognition, Algorithm for parallel and VLSI systems, Simulation and Modelling, Microprocessor based system design etc. In particular, the department has major sponsored research projects in Expert Systems, VLSI Design, Computer Networks and Speech Recognition.

The Department has well equipped laboratories for work in the areas of digital circuits, microprocessors, computer systems development, information sciences, speech and vision, CLASS project, system software, etc. There are several mini and micro computer systems available to support the teaching and research activities of the Department.

As a central facility, the department has also an IBM 370/155 and IPL 4443 main frame systems to cater to the needs of the various departments/centres/sections of the Institute. A new computing facility consisting of a Siemens 7580-E time-sharing system with 16 MB of memory and 80 terminals will be installed shortly. The system will be located in a specially designed building costing about Rs. 1.0 crore.

(A) The Institute invites applications for the following positions in the Department of Computer Science and Engineering to take up the challenging tasks in the Computer Centre.

The pay scales are noted against each post (likely to be revised). The approximate gross emoluments given in brackets includes HRA at the minimum of the pay scale.

(1) Senior Systems Engineer/Senior Systems Officer—Rs. 1500-60-1800-100-2000 (Rs. 3405-35)

(2) Systems Engineer/System Officer Rs. 1200-50-1300-60-1900 (Rs. 3075-35)

(3) Assistant Systems Engineer/Assistant Systems Officer—Rs. 700-40-1100-50-1600 (Rs. 2123.98)

If the candidates are not found suitable for the post applied for, they may be considered for the lower post advertised depending upon their academic background and relevant experience.

Posts are permanent or likely to become permanent. Besides pay, posts carry allowances and retirement benefits as per Institute rules. The allowances correspond at present to those admissible to the Central Government employees stationed at Madras.

Reservation for Scheduled Caste/Scheduled Tribe candidates is as per rules. The experience is relaxable for SC/ST candidates as per rules.

Minimum Qualifications and Experience

(1) Senior Systems Engineer/Senior Systems Officer

B.Tech. or equivalent with First Class or M.Sc. with first class with a minimum of 12 years experience relevant to job requirement, of which 4 years should be in a supervisory capacity

OR

M. Tech. or equivalent with first class or Ph.D. with a minimum of 10 years experience relevant to job requirement, of which 4 years should be in a supervisory capacity.

Should involve procurement, installation, development and operations of computer systems. Experience in organizing maintenance of a computer. Familiarity and ability to deal with hardware and software problems. Supervision of the work of a group of computer professionals. The candidate should have a good academic record.

(2) Systems Engineer/Systems Officer

B.Tech. or equivalent with first class or M.Sc. first class with 7 years relevant experience.

OR

M.Tech. or equivalent with first class with 5 years of relevant experience.

Candidates must have a good academic record. Experience in organizing client services and planning for client needs. Experience in maintenance of computer hardware/software.

(3) Assistant Systems Engineer/Assistant Systems Officer

B.Tech. or equivalent with first class or M.Sc. with first class with two years relevant experience.

Experience in installation of software, and design and development of application software.

(B) Medical Officer (Paediatrics)

The Institute also invites applications for the post of Medical Officer (Paediatrics) for the Institute Hospital. Scale of pay Rs. 700-40-1100-50-1600 plus allowances (gross emoluments at the minimum of pay scale is Rs. 2123 98 besides NPA on slab basis)

Qualifications and Experience

M.B.B.S. of an University recognised by the Indian Medical Council with Postgraduate diploma in Child Health (DCH) and with three years professional experience.

Accommodation : Licence free unfurnished quarter will be provided in the Campus and the appointee has to stay therein.

General Informations/Conditions

1. Experience means, experience gained after the qualifying degree

2. The Institute reserves the right to restrict the number of candidates for the interview to a reasonable limit on the basis of qualifications and experience higher than the minimum prescribed in this advertisement.

3. The Institute also reserves the right of rejecting any or all applications without assigning any reason therefor.

4. The Institute further reserves the right to recruit only to a few cadres among the categories advertised.

For application form please address the Registrar, Indian Institute of Technology, Madras-600036, with a self-addressed stamped (Re 1/-) envelope (22 cm X 17 cm). Applicants are requested to indicate clearly the post for which they wish to be considered. Persons in the service of Government establishments and Public Sector Undertakings should apply through proper channel.

Completed applications with a crossed non-refundable current Indian Postal order of the value of Rs 7.50 (Rs. 1 90 for SC/ST candidates) drawn in favour of the Institute payable at IIT Madras Post Office should be sent to the Registrar of the Institute.

The last date for the receipt of completed applications is 8th December, 1987.

DEAN OF ADMINISTRATION

SAURASHTRA UNIVERSITY

Kalawad Road, Rajkot-360005

Applications in the prescribed forms are invited for the undermentioned posts. Application forms alongwith detailed requirement of qualifications, experience and other necessary details regarding these posts will be available from the Registrar, Saurashtra University, University Campus, Kalawad Road, Rajkot-360 005 on sending a self-addressed envelope of the size 23 x 11 cms with postage stamps worth Rs. 3-80 for the post Nos. 1 to 5 and Rs 1-40 for the post No. 6. Applications in seven copies for the post Nos 1 to 5 and one copy for the post No. 6 should reach this office on or before 7-12-1987 alongwith crossed Indian Postal Order worth Rs 10.00. Qualifications, experience and specialization as mentioned in the details to be supplied with application form will be considered final.

1. Professor of Home Science—1

Must possess M.Sc. Degree in Home Science with specialization in Food and Nutrition or M.Sc. in Nutritional Biochemistry.

2. Reader in Home Science—1

Must possess M.Sc. degree in Biochemistry or Organic Chemistry or Microbiology with research and publications in Nutritional chemistry or child nutritional or therapeutic nutritional.

3. Lecturer in Home Science—1

Must possess M.Sc degree in Biochemistry or Organic Chemistry or Microbiology with research publication in Nutritional chemistry or child nutritional or therapeutic nutritional.

4. Reader in Education—1

Specialization in Research Methodology, Educational and Vocational Guidance and Psychological Testing

5. Lecturer in Commerce—1

In addition to the qualifications prescribed the person should be M.Com. with Accountancy. Those having C.A./

A.I.C.W.A. in addition to M.Com degree will be preferred.

6. Junior Research Fellow—2

Temporary for a period upto three years which may be extended. National Examination Test (NET) candidate will be paid Rs 1000/- fixed per month, other Rs. 800/- fixed per month. Candidate must be M.Sc. in atleast Higher Second class in branch of Biological Science/Geology/Biochemistry/Microbiology.

Another posts are permanent. Age ordinarily not exceeding 55 years. Age, educational qualifications or experience may be relaxed in suitable cases.

Pay Scales

1. Professor : Rs. 1500-60-1800-10-2000-125/2-2500

2. Reader : Rs 1200-50-1300-6-1600-assessment-60-1900

3. Lecturer : Rs. 700-40-1100-5-1300-assessment-50-1600.

R.A. Desai
REGISTRAR

BANARAS HINDU UNIVERSITY CORRIGENDUM TO ADVERTISEMENT NO. 4/1987-88-ITEM NO. 45

The number of vacancies for the post of Lecturer in Physics (Item No. 45 Faculty of Science may be read as THREE instead of two. Those who have applied for the post in response to Advt. No 5/1985-86 timely also need not apply again.

SRI SATHYA SAI INSTITUTE OF HIGHER LEARNING (DEEMED UNIVERSITY)

Vidyagiri, Prasanthinilayam 515134 (AP)

Applications are Invited for the Following Post :

Prasanthinilayam Campus (for Men)

Non-Academic

Stenographers—2 Nos (English)

Qualification—Graduate in English medium

Speed of 120 w.p.m in Shorthand and 45 w.p.m. in Typewriting

Scale of Pay—Rs. 575-2-775-25-950

Dearness and other allowances as per Institute rule

Selected candidates will be governed by the Contributory Provident Fund-cum Gratuity Scheme of the Institute.

Applicants may write to the Registrar within 15 days of the date of advertisement for the prescribed application form.

REGISTRAR

ANNAMALAI UNIVERSITY

ANNAMALAINAGAR

NOTIFICATION No. 12/87

Dated : 29-10-1987

Applications are invited in the prescribed form for filling up the following teaching posts in various Faculties of this University. Applications can be had from the undersigned on payment of Rs. 10/- (not refundable) by cash/money order/postal order. Applications (with 5 additional copies) should reach the undersigned on or before 27th November, 1987.

S No.	Name of the Post	Number of Post
FACULTY OF ARTS		
1.	Professor of Linguistics (Temporary)	1
FACULTY OF SCIENCE		
2.	Professor of Inorganic Chemistry	1
3.	Reader in Hydrogeology	1
4.	Lecturer in Statistics for Computer Studies	1
5.	Lecturer in Centralised Instrumentation Laboratory	2
FACULTY OF ENGINEERING & TECHNOLOGY		
6.	Professor of Computer Science	1
7.	Reader in Computer Science	1
8.	Lecturer in Computer Science	1
9.	Programmers	2
10.	Lecturer-cum-System Analyst	2
FACULTY OF EDUCATION		
11	Lecturer in Education (Commerce)	1
FACULTY OF AGRICULTURE		
12.	Lecturer in Agronomy	1
DIRECTORATE OF DISTANCE EDUCATION		
13.	Professor of Education	1
14.	Reader in Economics	1

Qualifications

Professor : (For Serial Nos. 1, 2 & 13)

A person with a distinguished academic record with Doctoral Degree and with 10 years of experience of teaching at Post-Graduate level and of guiding research at Doctoral level with publications of high quality to his credit.

OR

An eminent scholar with published work of high quality actively engaged in research. Ten years' experience of teaching and/or research, experience of guiding research at Doctoral level.

Specialisation for Serial No. 2

1. The candidate should have undergone the M.Sc., Course with specialisa-

tion in Inorganic Chemistry or should have done research in the area of Inorganic Chemistry for the Ph.D., degree.

2. The candidate should have rich experience both in teaching and in guiding research in the area of Inorganic Chemistry.

Those who have already applied for Professor of Inorganic Chemistry in response to University's advertisement made in August 1987 need not apply again.

Professor for Serial No. 6

a. Ph.D., degree in Computer Science with 5 years of teaching experience at Post-Graduate level.

OR

Ph.D. degree in any Engineering with experience in Computer Applications and Computer Centre and 5 years of teaching experience at Post Graduate level.

OR

M.E. degree in Computer Science or in any other Engineering discipline with 10 years of teaching/industrial experience in the field of Computer Science and Applications.

b. Research and/or industrial experience in the area of Computer Science, Technology and applications is preferable. Research experience with technical publications will be given credit.

Reader for Serial No. 3 & 14

A person with a good academic record with a Doctoral Degree or equivalent published work. Evidence of being actively engaged in (i) Research or (ii) innovation in teaching methods or (iii) Production of teaching materials.

About five years' experience of teaching and/or research provided that atleast three of these years were as Lecturer or in an equivalent position.

Specialisation for Serial No. 3

A Post M.Sc. Degree with specialisation in Hydrogeology and P.G. teaching experience in Hydrogeology for not less than ten years

Reader for Serial No. 7

a. Ph.D., degree in Computer Science

OR

Ph.D., degree in any Engineering with two years experience in Computer Applications and Computer Science.

OR

M.E. degree in Computer Science or any other Engineering discipline with 5 years of teaching experience in the field of Computer Science and Applications.

b. Research and/or industrial experience in the area of Computer Science, Technology and application is preferable. Research experience with technical publication will be given credit.

Lecturer for Serial No. 4

a. A person with a Doctorate degree or research work of an equally high standard, and

b. Good Academic record with atleast second class Master's degree in a relevant subject from an Indian University or an equivalent degree from a foreign University.

Knowledge of Computer Programming by possessing Diplomas or Certificates in Computer Programming.

Lecturer for Serial No. 5

B.E., (Electronics & Instrumentation)
OR
M.Sc., (Applied Physics) with specialisation in Electronics.

OR
M.Sc., (Tech.) in Instrumentation
AND
Sufficient experience in handling, operating and repairing instruments like spectrophotometers, oscilloscopes, X-Ray fluorescence (XRF), Polarographs etc.

Preference will be given to those who have already got sufficient experience in Centralised Instrumentation Service Laboratories.

Lecturer for Serial No. 8

M.E., Computer Science degree
OR

M.E., in any Engineering with at least two years experience in Computer Science and Applications.

OR
M.Sc., Computer Science with at least one year experience.

Programmers for Serial No. 9

a. M.Sc., in Mathematics, Physics or Statistics with specialisation in Computer Oriented subjects or Microprocessor OR B.E., OR M.C.A.,

b. Three years experience in a Data Processing environment as a Programmer.

Lecturer-cum-System Analyst for Serial No. 10

a. M.C.A., or B.E., or M.Sc., in Mathematics or Physics or Statistics with specialisation in Computer Oriented subjects or Microprocessor.

b. Three years experience in Programme development and system analysis.

c. Teaching experience is preferable.

Lecturer for Serial No. 11

a. A person with a Doctor's degree in Education or research work of an equally high standard; and

b. Good academic record with at least second class Master's degree in a relevant subject from an Indian University or an equivalent degree from a foreign University.

OR

a. A person with a Doctor's degree in any University discipline of research work of an equally high standard; and

b. Good academic record with at least second class M.Ed./M.Phil., degree in Education from an Indian University or an equivalent degree from a foreign University.

The candidate should possess M.Com., and M.Ed., degree.

Lecturer for Serial No. 12

A person with a Ph.D., degree or Master's degree in Agronomy with three years experience.

Scale of Pay

Professor : Rs. 1500-60-1800-100-2000-125/2-2500 with admissible allowances.

Reader : Rs. 1200-50-1300-60-1900 with admissible allowances.

Lecturer	Rs. 700-40-1100-50-1600 with admissible allowances
Programmer	
Lecturer-cum-Analyst	

These scales of pay will be revised on the basis of the recommendations of University Grants Commission shortly.

Candidates invited for interview for the post of Professor will be paid a single first class to and fro railway fare and for the post of Reader a single second class railway fare.

Those who are in service should route their applications through proper channel.

R. Rajamanickam
REGISTRAR

BHARATHIAR UNIVERSITY
COIMBATORE-641 046

NOTIFICATION

UGC—Junior Research Fellowships

Applications are invited from candidates who have qualified in the UGC National Educational Test for the award of UGC Junior Research Fellowships allotted to this University, at any one time' basis.

The University offers the following M. Phil./Ph. D. programmes at its University Departments.

1. Mathematics
2. Statistics
3. Physics
4. Chemistry
5. Botany
6. Zoology
7. Environmental Sciences
8. Computer Sciences
9. Tamil
10. Linguistics
11. Sociology
12. Psychology
13. Economics
14. Population Studies
15. School of Management Sciences and Entrepreneur Development.

Applications, with relevant enclosures may be submitted (in duplicate) in plain paper furnishing the following particulars :

1. Name
2. Address
3. Father/Husband's Name
4. Age and Date of Birth
5. Religion, Caste (Specify Whether BC/SC/ST/Others)
6. Educational qualifications (from degree level) indicating course completed, College/University, major subjects, specialisation, Marks, Division/Grades obtained etc.
7. Details of UGC NET examination passed, indicating Centre, Reg. No. subject, date of test, No. & date of the award letter (attested copy to be enclosed), etc.
8. Department
9. Discipline or Area of proposed research :
10. Whether registered for M. Phil./Ph.D. with details :
11. Any other relevant particulars :

Applications should reach the Registrar, Bharathiar University, Coimbatore—641 046 on or before 23-11-1987.

'Prof. P.N. Silambanan
REGISTRAR